

MEDICATION FOR ACUTE EXACERBATION

Medication	MDI Dose	Nebulizer Dose	Special Instructions
Short Acting Beta₂ Agonists			Deliver medication with a nebulizer, if unable to use MDI with spacer ⁽¹⁾ .
Albuterol	3 to 4 puffs q 1/2 to 2 hours	2 mg to 5 mg q 1/2 to 2 hours	
Metaproterenol	3 to 4 puffs q 1/2 to 2 hours	10 mg to 15 mg q 1/2 to 2 hours	
Terbutaline	3 to 4 puffs q 1/2 to 2 hours	N/A	
Anticholinergics			
Ipratropium Bromide	3 to 6 puffs q 2 to 4 hours	500 µg q 2 to 4 hours	
Systemic Steroids	Oral		Taper off or change to qod within 1 to 2 weeks. Taper schedule for oral prednisone: Days 4 to 7: 60 mg qd Days 8 to 11: 40 mg qd Days 12 to 15: 20 mg qd
Prednisone	40 mg to 60 mg q day		
Prednisolone	30 mg to 50 mg q day		
	Intravenous		
Methylprednisolone	0.5 to 1.5 mg/kg If admitted, q 6 h x 72 hours		
Theophylline	If patient is on theophylline check the level.		Aim for levels of 5 to 12 µg/ml

⁽¹⁾Assess use of metered dose inhaler (MDI and spacer). Frequency and dose can be titrated as the patient's condition allows. Patient can be discharged on a minimum dose or less.

OXYGEN THERAPY FOR ACUTE EXACERBATIONS OF COPD

- The goal of oxygen therapy is to optimize oxygenation and minimize respiratory acidosis.
- All patients presenting with acute exacerbation of chronic obstructive pulmonary disease should receive oxygen.
- Low flow oxygen therapy is preferred.
- Avoid high flow rate of oxygen unless essential. (A Venturi mask (24 to 35 percent) may be adequate until the PaCO₂ is determined.)
- The lowest fraction of inspired oxygen (FiO₂) resulting in a SaO₂ of 90 percent is optimal.
- Arterial blood gases (ABGs) should be obtained initially and SaO₂ should be monitored continuously.

ANTIBIOTIC THERAPY FOR COPD

- Many patients with acute exacerbations do well without antibiotic treatment.
- Patients who are older than 60 years or have severe underlying lung function impairment are more likely to benefit from the use of antibiotics.
- For patients whose exacerbation is associated with changes in sputum (e.g., quality, volume, and color) or fever, antibiotics are a reasonable treatment option.
- Antibiotic choice may be affected by the history of exacerbation in the individual patient and by the pattern of microbial resistance found in the community.

ICU ADMISSION CRITERIA

- Severe dyspnea that responds inadequately to initial emergency room therapy.
- Confusion, lethargy, or respiratory muscle fatigue.
- Persistent or worsening hypoxemia despite supplemental O₂ or severe or worsening of respiratory acidosis (pH ≤ 7.30).
- Required assisted mechanical ventilation, whether through means of tracheal intubation or noninvasive techniques.

Patient not admitted to the ICU should be observed for their response to therapy and assessed if they meet admission or discharge criteria.

DISCHARGE CRITERIA

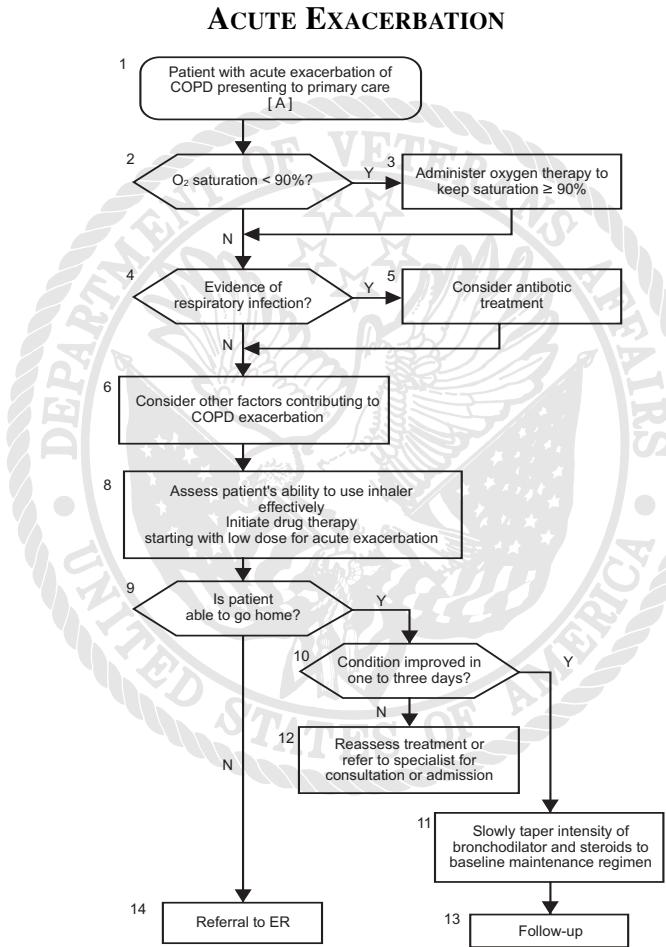
- The features of the severe exacerbation are resolved.
- Anticipated need for inhaled bronchodilators is not more frequent than every 4 hours.
- Patient or caregiver understands appropriate use of medications.
- Patient, family, and physicians are confident that the patient can manage successfully.
- Follow-up and home care arrangements have been completed (e.g., visiting nurse, oxygen delivery, and meal provisions).

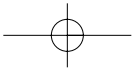
Patients who have not been admitted to the ICU, but do not achieve adequate control of symptoms should be admitted to the hospital ward.

INDICATIONS FOR ADMISSION

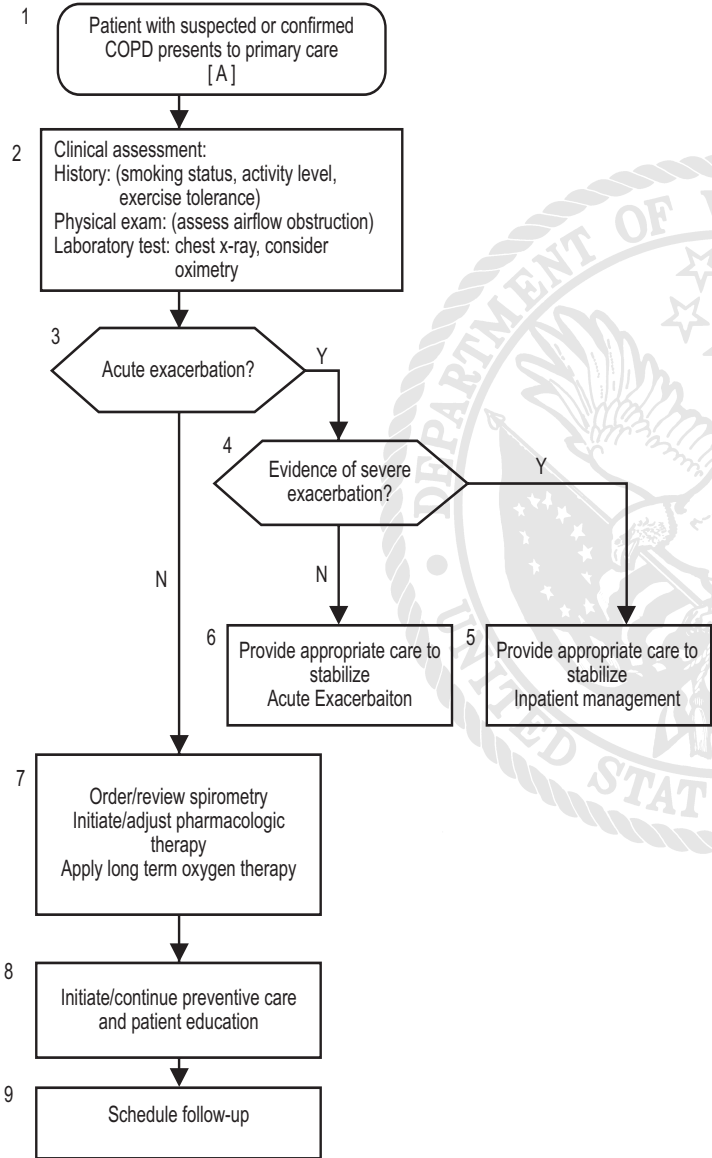
- Inadequate response of symptoms to outpatient management.
- Inability to carry out activities of daily living.
- Comorbid conditions (e.g., steroid myopathy, vertebral compression fractures, pneumonia, or heart failure) that increase the risk for respiratory distress.
- Altered mentation.
- Worsening hypoxemia.
- New or worsening hypercarbia.
- New or worsening cor pulmonale unresponsive to outpatient management.
- Conclusions by the family and/or physician that the patient cannot manage at home and supplementary home care resources are not immediately available.

VA/DoD Clinical Practice Guideline for Management of Chronic Obstructive Pulmonary Disease (COPD) Pocket Guide





OUTPATIENT MANAGEMENT



PHARMACOTHERAPY FOR THE OUTPATIENT MANAGEMENT OF COPD

Step	Symptoms and FEV ₁	Therapy
1	Asymptomatic and FEV ₁ >50% of predicted ⁽¹⁾	<ul style="list-style-type: none">Smoking cessation, vaccination, and patient educationNo medication indicated
2a	Symptoms less than daily and FEV ₁ ≥50% of predicted ⁽²⁾	<ul style="list-style-type: none">Smoking cessation, vaccination, and patient educationInhaled short-acting beta₂-agonist (2 puffs PRN up to 12 puffs/day)
2b	Asymptomatic and FEV ₁ <50% of predicted	<ul style="list-style-type: none">Smoking cessation, vaccination, and patient educationInhaled anticholinergic (2 puffs qid)Consider use of an inhaler containing a short acting beta₂-agonist and an anticholinergic
2c	Symptoms less than daily and FEV ₁ <50% of predicted or Daily symptoms	<ul style="list-style-type: none">Smoking cessation, vaccination, and patient educationInhaled anticholinergic (2 puffs qid)Short-acting beta₂ agonist (2 puffs PRN up to 12 puffs/day)Consider use of an inhaler containing a short acting beta₂-agonist and an anticholinergic
3	Symptoms not controlled ⁽²⁾	Increase the doses of both: <ul style="list-style-type: none">Inhaled anticholinergic (2 to 6 puffs qid), andInhaled short-acting beta₂ agonist (2 to 4 puffs PRN up to 12 puffs/day)
4	Symptoms not controlled ⁽²⁾	<ul style="list-style-type: none">Consider adding long-acting inhaled beta₂-agonist ⁽³⁾
5	Symptoms not controlled ⁽²⁾	<ul style="list-style-type: none">Consider adding a theophylline trial (i.e., slow release theophylline adjusted to levels of 5 to 12 µg/ml) ⁽⁴⁾
6	Symptoms not controlled ⁽²⁾	<ul style="list-style-type: none">Consider adding a corticosteroid trial (i.e., prednisone 40 to 60 mg po qd or a high dose of inhaled steroids) ⁽⁵⁾Consider specialist consultation
7	Symptoms not controlled ⁽²⁾	<ul style="list-style-type: none">Promptly refer to a specialist

⁽¹⁾ Spirometry is essential to confirm the presence of air-flow obstruction (low FEV₁ and FEV₁/VC ratio). Base therapy on symptoms, but consider alternate diagnoses (e.g., heart disease and pulmonary emboli) if out of proportion to spirometry.

⁽²⁾ Use the lowest level of therapy that satisfactorily relieves symptoms and maximizes activity level. Assure compliance and proper use of medications before escalating therapy.

⁽³⁾ Inhaled long-acting beta₂-agonists should not be used as rescue therapy. Short-acting inhaled beta₂-agonists (i.e., less than 12 puffs/day) may continue to be used PRN. Nighttime symptoms are frequently better controlled with long-acting inhaled beta₂-agonists. Oral beta₂-agonists are associated with a higher rate of side effects and should be reserved for patients who cannot take inhaled beta₂-agonist medications.

⁽⁴⁾ Theophylline should be used with caution because of the potential for severe side effects. Nighttime respiratory symptoms are frequently controlled, but theophylline may lead to insomnia. Theophylline should be discontinued if a symptomatic or objective benefit is not evident within several weeks.

⁽⁵⁾ A corticosteroid trial of prednisone (40 to 60mg/day) 10 to 14 days, or a high dose inhaled steroid (equivalent to 880 µg or more of fluticasone or 800 µg or more of budesonide) of 14 to 21 days can help identify patients who may benefit from long-term steroid use. Responders to oral steroids should transition to the lowest effective dose of inhaled steroids, or to the lowest effective dose of a combination of inhaled and oral steroids, if possible, to avoid the long-term complications of systemic corticosteroids. If oral steroids are used other than for an acute exacerbation, obtain spirometry prior to and after trial to confirm an objective response.